



Teaching Guide

| Teaching Guide | | | | |
|--------------------------|--|--------|--|-----------|
| Identifying Data | | | | 2022/23 |
| Subject (*) | Plant Biotechnology | | Code | 610441020 |
| Study programme | Máster Universitario en Bioloxía Molecular, Celular e Xenética | | | |
| Descriptors | | | | |
| Cycle | Period | Year | Type | Credits |
| Official Master's Degree | 2nd four-month period | First | Optional | 3 |
| Language | SpanishEnglish | | | |
| Teaching method | Face-to-face | | | |
| Prerequisites | | | | |
| Department | Bioloxía | | | |
| Coordinador | Bernal Pita da Veiga, María de los Ángeles | E-mail | angeles.bernal@udc.es | |
| Lecturers | Bernal Pita da Veiga, María de los Ángeles Pomar Barbeito, Federico | E-mail | angeles.bernal@udc.es federico.pomar@udc.es | |
| Web | https://campusvirtual.udc.gal/login/index.php | | | |
| General description | With Dr. Federico Pomar Barbeito | | | |

Study programme competences

| Code | Study programme competences |
|------|---|
| A4 | Skills to apply molecular techniques to the study of the plant cell physiology, its response to external triggers and their biotechnological applications. |
| A5 | Skills of understanding the microorganisms' role as pathogenic agents and as biotechnological tools. |
| A8 | Skills of having an integrated view of the previously acquired knowledge about Molecular and Cellular Biology and Genetics, with an interdisciplinary approach and experimental work. |
| A10 | Skills of modifying genes, proteins and chromosomes with biotechnological applications |
| B1 | Analysis skills to understand biological problems in connection with the Molecular and Cellular Biology and Genetics. |
| B3 | Skills of management of the information: that are able to gather and to understand relevant information and results, obtaining conclusions and to prepare reasoned reports on scientific and biotechnological questions |
| B8 | Critical reasoning skills and ethical commitment with the society: sensitivity in front of bioethical problems and to the ones related to the natural resource conservation |
| B9 | Skills of preparation, show and defense of a work. |
| C1 | Ability to express oneself correctly, both orally and in writing, in the official languages of the autonomous community |
| C2 | Ability to know and use appropriately the technical terminology of the field of knowledge of the master, in the native language and in English, as a language of international diffusion in this field |
| C6 | Acquiring skills for healthy lifestyles, and healthy habits and routines. |
| C8 | Valuing the importance of research, innovation and technological development for the socioeconomic and cultural progress of society. |

Learning outcomes

| Learning outcomes | Study programme competences | | |
|---|-----------------------------|--------------------------|------------|
| Ability to manage information: gather and interpret data, information and relevant results, draw conclusions and issue reasoned reports on scientific and biotechnological issues | | BR1 BR3 BR8 BR9 | |
| Knowing the importance of research, innovation and technological development in the economic and cultural advancement of society. | AR5 AR10 | BR8 | CC6 CC8 |
| Ability to understand the current state of the Plant Biotechnology and use Basic terminology used in the field | AR4 AR8 | BR1 | CC8 |
| Adequate oral and written expression in the official languages | | | CC1 CC2 |



| Contents | |
|---|--|
| Topic | Sub-topic |
| Module 1. Historical development of the Plant Biotechnology | 1. The 1 ^a and 2 ^a Green Revolution 2. What is the Plant Biotechnology? |
| Module 2. Technical approach of the Plant Biotechnology | 1. Genetic engineering in plants: general concepts 2. Methods of obtaining of transgenic plants |
| Module 3. Main applications of the Plant Biotechnology | 1. Transgenic Plants applications |

| Planning | | | | |
|-------------------------|--------------------------------|----------------------|-------------------------------|-------------|
| Methodologies / tests | Competencies | Ordinary class hours | Student's personal work hours | Total hours |
| Introductory activities | C1 C8 | 2 | 0 | 2 |
| Online forum | B1 C2 C6 | 0 | 1 | 1 |
| Document analysis | A4 A5 A8 A10 B1 B3 B8 B9 | 0 | 35 | 35 |
| Collaborative learning | A4 A5 A8 A10 B1 B3 B8 B9 C1 | 10 | 20 | 30 |
| Binary questions | A4 A5 A8 A10 B1 B3 | 2 | 0 | 2 |
| Personalized attention | | 5 | 0 | 5 |

(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

| Methodologies | |
|-------------------------|---|
| Methodologies | Description |
| Introductory activities | Activities used at beginning of any teaching-learning process to obtain information regarding student competences, interests and/or motivations in relation to specific learning outcomes, which educators may then incorporate in their planning to create more meaningful, effective learning experiences based on students' existing knowledge. |
| Online forum | Informal discussion space for students to exchange ideas concerning specific problem or topic. Interaction takes place in online learning environment using asynchronous communication tools (?forum?). |
| Document analysis | Research skills development involving use of audiovisual and/or bibliographical documents (documentary or film extracts, news items, advertising images, photographs, articles, legal texts, etc.) relating to specific topic of study, with targeted analysis activities. Used as introduction to topic, as focus for case study, to explain abstract processes and present complex situations, or as strategy for synthesising content (theoretical and practical). |
| Collaborative learning | Guided teaching-learning procedures (overseen in person and/or using ICT methods) based on organisation of class in which students work together to solve tasks assigned by teacher, with aim of optimising their learning experience and that of other members of group. |
| Binary questions | Objective test in which students are required to respond to a specific question using one of two closed answer options. (Answer options for binary questions are ?yes/no? or ?true/false?.) |

| Personalized attention | |
|-------------------------|---|
| Methodologies | Description |
| Introductory activities | In tutorial sessions, each student will discuss with the teacher the progress of the course, and all questions that are submitted to the content thereof. This tutorial sessions will be by Teams preferently, with previously date by mail. |
| Binary questions | |
| Collaborative learning | |
| Online forum | |
| Document analysis | |

| Assessment |
|------------|
|------------|



| Methodologies | Competencies | Description | Qualification |
|------------------------|--------------------------------|---|---------------|
| Binary questions | A4 A5 A8 A10 B1 B3 | To minimum qualification to surpass to matter will be of 5 points | 30 |
| Collaborative learning | A4 A5 A8 A10 B1 B3 B8 B9 C1 | Concretion and clarity in the contents Consults of different sources of information | 30 |
| Online forum | B1 C2 C6 | Participation of active form and proposal of new threads of conversation in the forum | 20 |
| Document analysis | A4 A5 A8 A10 B1 B3 B8 B9 | His contribution is not a reproduction of the text of origin, but a coherent synthesis in which only they appear the most important appearances of the same | 20 |

Assessment comments